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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/367,153	08/09/1999	ALASTAIR SIBBALD	62-194	3951

7590 10/02/2003

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EXAMINER

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/02/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/367,153

Applicant(s)

SIBBALD ET AL.

Examiner

Devona E. Faulk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-33 and 34-43 is/are allowed.
- 6) ☒ Claim(s) 14-23 and 44-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/367153.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Claim Objections***

1. Claims 15-23, 45-53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

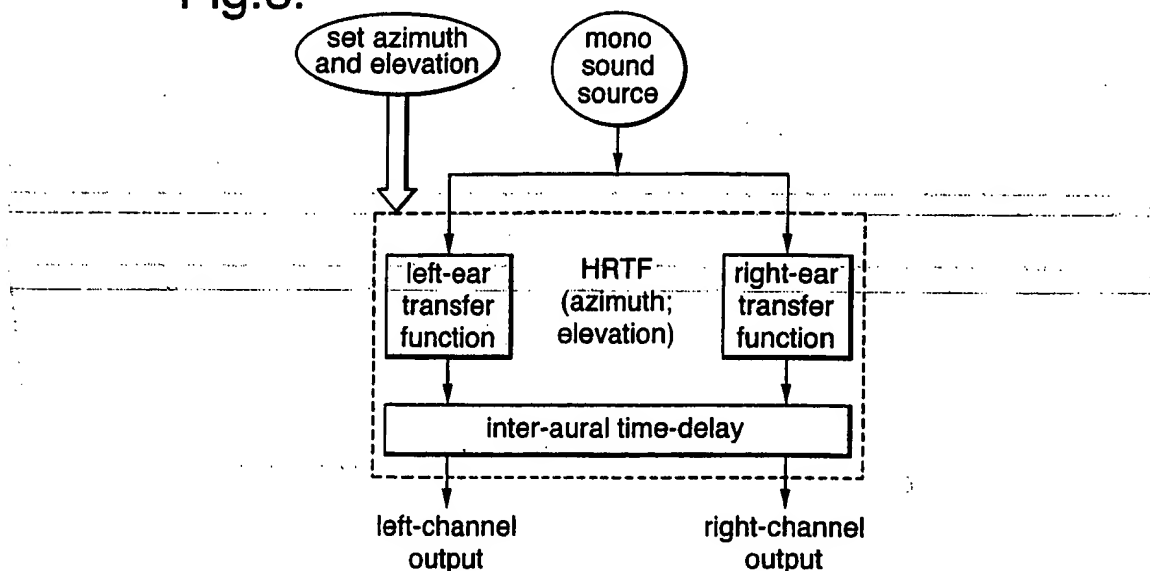
Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (page 2, line 23; Figure 8).

Regarding claim 14, the applicant's admitted prior art discloses a prior art method of processing an audio signal.

Fig.8.

It teaches of left and right channel output signals created from a mono sound source, which reads on “providing a right channel and left channel, each of said right channel and left channel carrying said single channel audio signal”; both the left and right channel processed using HRTF on each channel separately which reads on “modifying said single channel audio signal of each of said right channel and said left channel using at least one of a plurality of head response transfer functions to provide a right signal in said right channel for a right ear of said listener and a left signal in said left channel for a left ear of said listener”; both the right and left signals are delayed which reads on “introducing a time delay between said right channel and said left channel to provide cues to perception of a direction of said source position relative to said preferred position of said listener at a given time, and said time delay corresponding to an interaural time difference of said sound from sound source with respect to said listener”. The interaural time difference describes the time delay between sounds arriving at the left and right ears. It is well known in the art that interaural time difference is a source of localization cues. It is obvious that you would use the respective values of magnitude of the left and right signal to provide cues for perception of the source position from the preferred position at said given time because the goal is to achieve the best possible and most accurate sound. Thus it would have been obvious to one of ordinary skill at the time of the invention to use the applicant’s prior art in order to process a single channel audio signal using binaural processing in order to achieve the best sound.

4. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant’s admitted prior art (Figure 8).

Regarding claim 44, the applicant's admitted prior art discloses a prior art method of processing an audio signal. It teaches of a mono sound source which reads on "an audio signal"; left and right channel output signals created from that mono sound source and both the left and right channel processed using HRTF on each channel separately which reads on "a right signal for a right ear of a listener, said right signal being obtained by modifying a single channel audio signal using at least one of a plurality of head response transfer functions, said single channel audio signal corresponding to a sound from a sound source located at a source position relative to a preferred position of said listener" and also reads on "a left signal for a left ear of said listener, said left signal being obtained by modifying said single channel audio signal using at least one of a plurality of head response transfer functions"; both the right and left signals are delayed which reads on "wherein said left signal and said right signal having there between a time delay to provide cues to perception of a direction of said source position relative to preferred position of said listener at a given time, said time delay corresponding to an interaural time difference of said sound from said sound source with respect to said listener". The interaural time difference describes the time delay between sounds arriving at the left and right ears. It is well known in the art that inter-aural time difference is a source of localization cues. It is obvious that you would use the respective values of magnitude of the left and right signal to provide cues for perception of the source position from the preferred position at said given time because the goal is to achieve the best possible and most accurate sound. Thus it would have been obvious to one of ordinary skill at the time of the invention to use the applicant's prior art in order to have an audio signal comprising the claimed matter for the benefit of achieving the best sound for the listener.

Allowable Subject Matter

5. The following is an examiner's statement of reasons for allowance:
6. Claim 24 claims a computer readable storage medium having stored thereon a computer program for implementing a method of processing a single channel audio signal corresponding to a sound from a sound source located at a source position relative to a preferred position of listener, said computer program comprising a set of instructions for providing a right channel and a left channel, each of said right channel and said left channel carrying said single channel audio signal; modifying said single channel audio signal of each of said right channel and said left channel using at least one of a plurality of head response transfer functions to provide a right signal in said right channel for a right ear of said listener and a left signal in said left channel for a left ear of said listener; introducing a time delay between said right channel and said left channel to provide cues to perception of a directions of said source position relative to said preferred position of said listener at a given time, said time delay corresponding to an inter-aural time difference of said sound from said sound source with respect to said listener; and choosing respective values for magnitude of said left signal and magnitude of said right signal to provide cues form perception of a distance of said source position from said preferred position at said given time. Prior art discloses computer readable storage mediums, however, fails to disclose or make obvious a computer readable storage medium having stored a program for the claimed method of processing an audio signal. Therefore claim 24 is allowable matter.
7. Claims 25-33 are allowable due to dependency on claim 24.

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8. Claim 34 claims an apparatus for processing a single channel audio signal corresponding to a sound from a sound source located at a source position relative to a preferred position of a listener, comprising means for providing a right channel and a left channel, each of said right and said left channel adapted to carry said single channel signal, means for modifying said single channel audio signal of each of said right channel and said left channel using at least one of a plurality of head response transfer functions to provide a right signal in said right channel for a right ear of listener and a left signal in said left channel for a left ear of said listener, means for introducing a time delay between said right channel and said left channel to provide cues to perception of a direction of said source position relative to said preferred position of said listener at a given time, said time delay corresponding to an interaural time difference of said sound from said sound source with respect to said listener, and means for choosing respective values for magnitude of said left signal and magnitude of said right signal to provide cues for perception of a distance of said source position from said preferred position at said given time. The applicant's admitted prior art teaches of left and right channel output signals created from a mono sound source, both the left and right channel processed using HRTF on each channel separately, and both right and left signals are delayed. The means is obvious from the method provided. The means is head response transfer filters. Thus this all reads on the following: " means for providing a right channel and left channel, each of said right channel and left channel carrying said single channel audio signal"; "means for modifying said single channel audio signal of each said right channel and said left channel using at least one of a plurality of head response transfer functions to provide a right signal in said right channel for a right ear of said listener and a left signal in said left channel for a left ear of said listener"; and "means for introducing a time delay

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between said right channel and said left channel to provide cues to perception of a direction of said source position relative to said preferred position of said listener at a given time, said time delay corresponding with respect to said listener". Although prior art does teach of the above claimed elements, it does not teach on a means for choosing respective values for magnitude of said left signal and magnitude of said right signal to provide cues for perception of a distance of said source position from said preferred position at a given time. Therefore claim 34 is allowable subject matter.

9. Claims 35-43 are allowable due to dependency on claim 34.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 703-305-4359. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

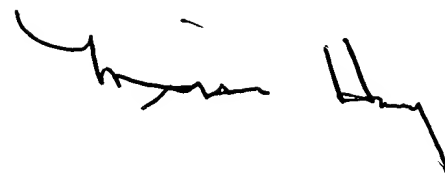
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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A handwritten signature in black ink, appearing to read 'Minsun Oh Harvey', written in a cursive style.

MINSUN OH HARVEY
PRIMARY EXAMINER